

Name: Key

Date: \_\_\_\_\_

**Area of Regular Polygons- Given a Radius HW**

Find the area of each regular polygon given the information.

**Add**  
**Round to nearest tenth**1. A regular heptagon with  $r = 10\text{m}$ 

$$360 \div 7 \approx 51.4$$

$$A = 7 \left(\frac{1}{2}\right) (10)(10) \sin 51.4$$

$$A \approx 273.5 \text{m}^2$$

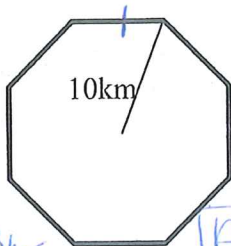
2. A regular dodecagon with  $r = 3\text{in}$ 

$$\frac{360}{12} = 30$$

$$A = 12 \left(\frac{1}{2}\right) (3)(3) \sin 30$$

$$A \approx 27 \text{in}^2$$

3.



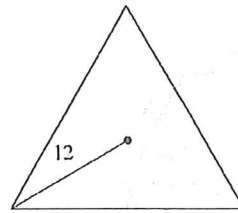
$$n = 8$$

$$\frac{360}{8} = 45$$

$$A = 8 \left(\frac{1}{2}\right) 10 \cdot 10 \sin 45$$

$$A \approx 282.4 \text{ km}^2$$

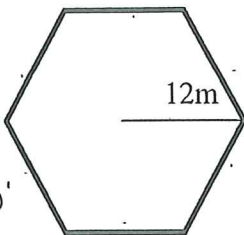
4.



$$A = 3 \left(\frac{1}{2}\right) (12)(12) \sin 120$$

$$A \approx 187.1 \text{ units}^2$$

5.

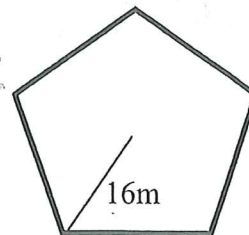


$$\frac{360}{6} = 60$$

$$A = 6 \left(\frac{1}{2}\right) (12)(12) \sin 60$$

$$A \approx 374.1 \text{m}^2$$

6.

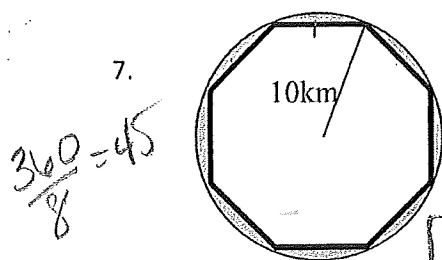


$$\frac{360}{5} = 72$$

$$A = 5 \left(\frac{1}{2}\right) (16)(16) \sin 72$$

$$A \approx 608.7 \text{m}^2$$

Find the area of each shaded region, rounding to the nearest tenth.

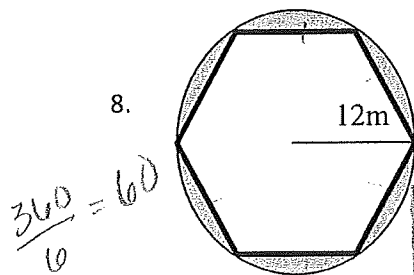


O - poly.

$$A = \pi 10^2 - 8 \left(\frac{1}{2}\right) (10)(10) \sin 45$$

$$A = 100\pi - 282.8$$

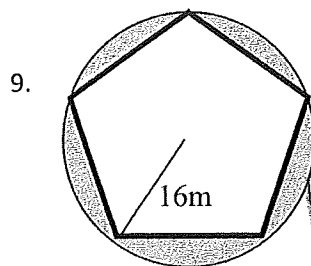
$$A \approx 31.4 \text{ km}^2$$



$$A = \pi 12^2 - 6 \left(\frac{1}{2}\right) (12)(12) \sin 60$$

$$A = 144\pi - 374.1$$

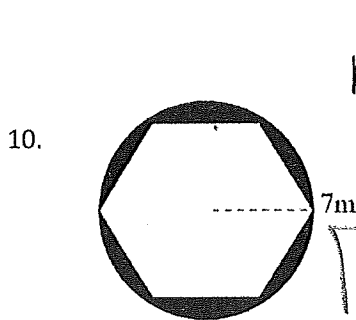
$$A \approx 78.3 \text{ m}^2$$



$$A = \pi 16^2 - 5 \left(\frac{1}{2}\right) (16)(16) \sin 72$$

$$A = 256\pi - 608.7$$

$$A \approx 195.5 \text{ m}^2$$



$$A = \pi 7^2 - 6 \left(\frac{1}{2}\right) (7)(7) \sin 60$$

$$A = 49\pi - 127.3$$

$$A \approx 26.6 \text{ m}^2$$